REPLACEMENT CLAIMS

Please substitute the following claims for the pending claims with the same number.

1. (Once amended) A GPS receiver, comprising:

an antenna to collect a GPS signal that is a composite signal comprising a contribution from each GPS satellite in view of the receiver;

a signal conditioning processor to amplify, filter and downconvert the GPS signal to baseband;

an A/D converter to digitize the GPS signal at a pre-determined sample rate;

a memory to store a portion of the GPS signal;

A1

an FFT process to convert the portion of the GPS signal stored in the memory to the frequency domain;

a multiplier for multiplying the frequency representation of the stored GPS signal with a frequency representation of a Gold code associated with one of the GPS satellites in view of the GPS receiver and for storing the result in the memory as a product;

an inverse FFT process for converting the product to the time domain as a convolution;

a peak detector to find a location of a peak in the convolution, the location of the peak being an estimate of the Gold code phase; and

carrier frequency acquisition means for determining a carrier frequency associated with the downconverted GPS signal based on a height of the peak.

5. (Once amended) The GPS receiver recited in claim 4, wherein the means for adjusting carrier frequency comprises means for performing a half-bin analysis.

A2

A1

6. (Once amended) A GPS receiver to receiver and detect a composite GPS signal comprising GPS signals from all GPS satellites in view of the GPS receiver, comprising:

an antenna to receive the composite GPS signal;

a memory to store a portion of the received composite GPS signal;

A2 cont.

means for segmenting the stored GPS signal into plurality of segments, each segment one millisecond in duration;

an FFT process to perform an FFT on each segment;

a plurality of multipliers to multiply each FFT segment by a frequency representation of a GPS Gold code to generate a plurality of product vectors;

an inverse FFT process to convert each product vector to the time domain;

a magnitude calculator to calculate a point-by-point magnitude vector of each of the product vectors;

an adder to calculate a point-by-point sum of each of the magnitude vectors;

a peak detector to determine a location of a peak as an estimate of the Gold code phase; and

means for determining a carrier frequency using a height of the peak.

A3

10. (Once amended) The method recited in claim 9, further comprising the step of adjusting the carrier frequency of the one millisecond sample to make the peak more distinct.

A4

12. (Once amended) The method recited in claim 9, further comprising the step of using a curve fitting routine to refine the location of the peak.

14. (Once amended) A method for detecting Gold code phase and carrier frequency in a GPS signal comprising the steps of:

collecting a multiple millisecond portion of a composite GPS signal in a GPS receiver;

storing the portion of the composite GPS signal in a memory in the GPS receiver;

partitioning the collected composite into one millisecond segments;

converting each one millisecond segment to the frequency domain;

multiplying each of the converted millisecond segments by a frequency representation of a Gold code corresponding to a GPS satellite in view of the receiver to generate a product;

converting each product to the time domain to obtain a correlation signal between each millisecond segment and the Gold code;

determining a location of a peakcorresponding to a Gold code phase using the correlation signals; and

determining a carrier frequency associated with each of the millisecond segments based on a height of the peak.